

Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, DC 20554

In the Matter of
) ET Docket No. 01-278

Review of Part 15 and other Parts
) RM-9375

Of the Commission's Rules
) RM-10051

To: The Commission

REPLY COMMENTS OF ATN, THE AMATEUR TV NETWORK
IN RESPONSE TO COMMENTS TO

NOTICE OF PROPOSED RULE MAKING

Amateur TV Network (ATN), a group of Amateur Television (Amateur Radio) Repeater Stations linked to form a network of thirteen operational repeaters covering Arizona, California, Nevada and New Mexico, Pursuant to Section 1.415 of the Commission's Rules (47 C.F.R. 1.415) ATN hereby respectfully submits its reply comments to the Comment to Notice of Proposed Rule Making and Order (the notice) FCC 01-290, 66 Fed. Reg. 56793, released October 15, 2001.

I. Introduction

The Commission asked for reply comments to the notice to be submitted no later than March 12, 2002. The notice has two rule making petitions grafted into it. One of the notices RM-10051, filed by SAVI Technology Inc. is of great concern to Amateur TV Network and the Amateur Radio Community. RM-10051 proposes to increase both the duration to near continuous duty and a major increase in power of part 15 devices in the 425-435 MHz portion of the 70 cm band with Savi specifying a center frequency of 433.92 MHz. The 70 cm band has existing licensed operations in the band. Upon review of the Commission's database covering this proceeding, ATN noticed the Amateur Television mode was not adequately covered by existing comments nor was there any interference analyses performed to evaluate the impact to the amateur television mode. ATN's Reply Comments will address this issue.

II. Impact to 434 MHz Amateur Stations Utilizing Simplex Operations

Should the Commission decide to change the part 15 (section 15.231) of the Commission's rules to increase both power and duration of radiation from the thousands of part 15 stations as proposed by SAVI, it will cause harmful co-channel interference to simplex 434 MHz operations. Amateur Television uses AM

(VSB) modulation, interference to AM or VSB television reception can be seen in the picture down to -45 dB below the desired signal. Most ATV simplex stations are equipped for weak signal operation for long distance communications via line of site for local coverage and tropospheric ducting for communications over a hundred miles is common. On occasion stations along the California coast have contacted Amateur TV stations in Hawaii.

Savi's analysis of the ARRL's Ex Parte Presentation to the Office of Engineering and Technology on January 14, 2002 is seriously flawed. In the Savi interference analysis only addressed FM voice operations on 433.92 MHz and EME operations on 432 and 433.92 MHz. It is surprising that Savi never mentioned 434 MHz ATV operations perhaps because both ATV and the Savi system are wide band systems that would be co-channel. Savi refers to as they call it "The ARRL Band Plan" indicating ATV is 425-432 MHz. This is only an old outdated recommendation by the ARRL. Band plans are regional and vary somewhat across the nation. 434 MHz is used by ATV operators in about 60% of the nation The ARRL repeater directory for years have shown under the ATV Repeater listings for each state, about half of the states have 434 MHz ATV repeater inputs and list simplex operation on 434 MHz as well. 434 MHz ATV is the single most used mode of operation on or within 100 KHz of 433.92 MHz

Savi indicated in their analysis that interrogation stations are at -28.17 dBm for the conversion of 110,000 microvolts per meter at 3 meters. Although this is not exact it is close enough, however their data for 1 kilometer (-142 dBw) and 0.1 kilometer (-122.57 dBw) is incorrect by 33.2 dB. ATN's calculations for an interrogation station signal 1 kilometer distance is -87.5 dBm into an isotropic antenna, it is strong enough to cause harmful interference to ATV stations from several kilometers away. ATV DX communications take place with signal weaker than -87.5 dBm into the receiver, add to this the gain of a high gain beam, lets take a typical single yagi at 14 db gain and 3 db feeder loss and the signal from an interrogation station a 1 km is -76.5 dBm into a ATV receiver. This assumes just one interrogation station in the path of an ATV station. Multiple interrogation stations and RFID tags would cause an accumulation of radiation far above the level of just one interrogation station. RACES and ECS groups use ATV on 434 MHz to provide damage assessment and live events during disasters like earthquakes, fire, floods and other emergencies. Harmful co-channel interference would reduce Amateur TV Operators' ability to provide adequate assistance to the community.

III. Impact to Amateur Repeater Stations

Amateur TV Network TV repeaters have a 434 MHz receiver. The receiver system consists of a high gain wide area coverage antenna with a tower mounted filter and preamplifier to provide weak signal reception. The repeaters are located on mountain top locations with line of sight to both residential and industrial areas in major cities of Los Angeles, Long Beach, San Diego, Las Vegas, Phoenix, Tucson, and San Bernardino and surrounding towns and smaller cities. The repeaters would receive thousands of undesired signals, the accumulative affect would greatly increase interference to the repeater station receivers. Although ATN listed major cities that are covered by our network, most of the southern states, areas above line A near the Canadian boarder, Northern California, Oregon and Washington also use 434 MHz for simplex and repeater inputs.

To fully realize the impact to an ATV repeater we will examine a typical ATV repeater, ATV station located 60 kilometers distance from the repeater and a

proposed RFID tag interrogation station located 3 kilometers distance from the repeater. A typical ATV station on 434 MHz uses a 10 watt transmitter, a 14 dB yagi antenna and has 3 dB of feeder loss. The result is a +51 dBm E.R.P. signal the repeater has a 10 dB omni directional antenna and 2-dB feeder-filter loss. Path loss for the desired station is 119 dB, the desired signal at the repeater receiver is -60 dBm (snow free picture).

The undesired signal, a RFID Interrogation station would have a signal level of -87.5 dBm at 1 km and at 3 km the signal is 93.5 dBm (isotropic), allowing for the repeater's antenna gain and feeder loss the repeater receives a -85.5 dBm interfering signal. A D/U ratio of 25.5 dB. This ratio will produce an objectionable crosshatch pattern to the picture. Add multiple interrogation station and RFID tags radiating and the picture would be unusable. Weaker more distant ATV stations accessing a repeater will receive far worse interference than the case described above. Portable and mobile stations will have much higher interference ratios due to using omni antennas instead of the beam antenna used for a base station.

IV. Impact of Amateur TV Stations to the proposed RFID tags

Upon review of comments by the ARRL and others, impact of co-channel ATV stations and other amateur stations in the 425 MHz-435 MHz band were not adequately addressed. Most ATV base stations use 10 to 50 watts of power and high gain 13-18 dB antenna systems and 3 dB feeder loss this combination would produce a 50 to 58 dBm effective radiated power station capable of causing a zone of blockage of communications to part 15 devices for several miles in front of the transmitting antenna. This co-channel blockage would interrupt communications between the interrogation stations and the RFID tags. In the west An example: An interrogation station located 6 meters from a cargo container delivers a -33 dBm signal to the tag(s), an ATV station located 2 km running 58 dBm E.R.P. would deliver a -35.5 dBm signal to the tags interrupting communications. In the case of the tags communicating back to the interrogation station the situation is much worse. Thus an ATV station located several kilometers from RFID tag systems on 433.92 MHz would cause them to stop communicating. Most ATV station antennas are located on towers and some stations are located in hills and mountains overlooking residential, industrial and harbor areas making the chance of both interference between ATV stations and the proposed RFID tags very great. Just last year a company in Cleveland Ohio had started car alarm business using 433.92 MHz. Filed an interference complaint to the Commission about an ATV station using 434 MHz blocked proper operation of the alarm systems over most of the city. The amateur station had priority over part 15 and the complaint was denied.

V. The 425 MHz-435 MHz band is not a global standard

Many countries have restrictions in the 425 MHz-435 MHz band and 425-430 MHz is used for two-way commercial radio operation in Canada, Europe and some cities of the United States located near Canada. Japan has no part 15 type operations in the UHF spectrum. ATN agrees with the ARRL's Global Standards (VI.) comments filed with the Commission in February of 2002.

VI. Conclusions

The Commission's biennial review recommendations in this proceeding are in general sound however one of the two rule making proceedings that are grafted into it is not. The RFID rules proposed in response to the SAVI petition are flawed and would cause harmful interference to Amateur Radio and Amateur Television operations. Amateur Radio and Amateur Television operations would disrupt RFID tags from communicating. The Commission should await efforts by other RFID systems, and look for a part 15 band that already allows higher power and duration to minimize interference to licensed stations.

Respectfully submitted,

Amateur Television Network
P.O. Box 1594
Crestline, CA 92325

By:
Mike Collis
ATN Engineer

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